

**GUIDELINE
PREVENTION AND CONTROL OF
ANTIBIOTIC RESISTANT
MICROORGANISMS
CALIFORNIA LONG-TERM CARE
FACILITIES**

California Department of Health Services
Licensing and Certification Program
and
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January 1996

INTRODUCTION

Antibiotic-resistant microorganisms (ARM) are as prevalent today in long-term care facilities (LTCF) as they are in acute care facilities. These microorganisms include methicillin-resistant *Staphylococcus aureus* (MRSA), aminoglycoside (gentamicin, tobramycin, amikacin) resistant gram-negative bacilli (ARGNB), such as *Pseudomonas aeruginosa*, and the emerging vancomycin-resistant enterococci (VRE).

The widespread use of antibiotics is strongly associated with the development of bacterial resistance emerging in the United States today. The antibiotic methicillin was synthesized in 1959 and within two (2) years methicillin-resistant strains of *Staphylococcus aureus* were reported. The aminoglycosides, gentamicin and tobramycin, were introduced in the early 1960's. Between 1965 and 1975, 11 of the 15 outbreaks investigated by the Centers for Disease Control and Prevention (CDC) involved ARGNB.⁽¹⁾ Vancomycin-resistant enterococci (VRE) infections reported to the CDC National Nosocomial Infections Surveillance System (NNIS) by participating acute care hospitals have increased from 0.3% to 7.9% over the past five (5) years.⁽²⁾ The increased use of vancomycin for surgical prophylaxis and treatment of *Staphylococcal* infections, including MRSA, has led to the emergence of VRE.

In addition to antibiotic administration, there are other risk factors associated with the acquisition of ARM, especially in the elderly population. These factors include prolonged hospitalization, cardio-thoracic or intra-abdominal surgical procedures, chronic underlying diseases such as diabetes and cardiovascular disease, induced immunosuppression and neurological illnesses resulting in immobility and incontinence.

Historically, to prevent the transmission of specific infectious agents, including ARM, patients have been placed in isolation precautions as recommended by the CDC's *Isolation Techniques for Use in Hospitals*.⁽³⁾ These recommendations were easily adopted for implementation in acute care facilities because of the availability of private rooms for patients with infections that required one of the major categories (e.g. wound and skin precautions) of the isolation system. However, as health care reform evolved and LTCF were pressured to accept patients requiring isolation, the shortage of private rooms in these facilities discouraged the adoption of the CDC isolation recommendations and the acceptance of patients who required isolation.

Recently, CDC published a new draft, *Guideline for Isolation Precautions in Hospitals* (final draft to be published in late 1995)⁽⁴⁾. In the new guideline, two (2) levels of isolation precautions are recommended. The first or basic level of precautions synthesizes the major features of Universal (Blood and Body Fluid) Precautions with Body Substance Isolation. These basic precautions apply to contact with all patients regardless of diagnosis or presumed infection status. This common sense approach protects both the patient and the nursing staff. The patient is protected in that transmission of all potentially pathogenic microorganisms, including ARM, is reduced. The staff is protected from possible occupational exposure to blood or other body fluids which may be infected with bloodborne pathogens such as human immunodeficiency virus (HIV) and hepatitis B virus (HBV). The basic level of isolation precautions includes handwashing and

the use of personal protective equipment such as gloves and gowns with any health care worker-patient interaction if contact with blood or any other body fluids (except tears, sweat or saliva) is anticipated.

The second level of isolation precautions is designed for patients documented or suspected to be infected with highly transmissible pathogens. In addition to basic precautions, private rooms are recommended to reduce the potential for transmission of specific infections such as tuberculosis.

The new categories of isolation precautions developed by the CDC are designed for implementation in acute care facilities. However, the recommendations can be modified for implementation in LTCF. The modifications are based on five assumptions: 1) most LTCF now have sporadic occurrences (endemic) of MRSA, ARGNB and now VRE; 2) within the next few years ARM colonization and infection will become more widespread and problematic for LTCF; (3) few LTCF have more than one or two private rooms, therefore, isolating residents in a private room is not a prevention and control option; (4) if basic isolation precautions are routinely adhered to by the nursing staff caring for residents in LTCF, few outbreaks of ARM or other pathogenic microorganisms such as *Clostridium difficile* will occur; and (5) patients need to be able to move freely from one level of care to another, such as from acute to long-term care.

IDENTIFICATION OF ANTIBIOTIC RESISTANT MICROORGANISMS

Surveillance is the cornerstone of all infection prevention and control programs regardless of the type of facility or the complexity of care rendered. Surveillance is a method of collecting and analyzing information about the microbial population endemic to a specific facility. The information obtained can be used to establish baseline rates of infection and colonization for specific ARM as well as other pathogenic microorganisms such as *Clostridium difficile*. Once baseline rates are determined, the information can be quickly analyzed to determine if an increase in new cases represents an outbreak for which special interventions may be necessary. Surveillance should include the following components:

1. Review all culture and sensitivity laboratory reports at least weekly (by the Infection Control Coordinator).
2. Maintain a separate data base (line-listing or log book) for each ARM identified by the laboratory. Include the following information: 1) name, 2) age, 3) sex, 4) date of transfer into facility, 5) name of transferring facility, 6) site(s) cultured, 7) date(s) of culture(s), 8) specific ARM identified and the antibiotic resistance, 9) antibiotic(s) prescribed and duration of therapy within two (2) weeks prior to a positive ARM culture, 10) presence of invasive devices (e.g., indwelling urinary catheters, vascular access lines, tracheostomy), 11) room assignment, 12) name of roommate(s), 13) infection risk assessment (e.g., aspiration, chronic bronchitis, non-intact skin sites and bowel and bladder incontinence).
3. Determine by chart review or physical assessment if the site cultured was infected or colonized and enter information into data base.

4. Analyze the data bases prior to each Infection Control Committee meeting to determine common relational factors such as microorganism(s) cultured, antibiotic resistance patterns, relationship of new cases and old cases (e.g., room placement, activity times, etc.), transferring facility and sites of positive culture(s) such as urine, etc.
5. Report the findings to the Infection Control Committee.
6. Implement the recommendations of the Infection Control Committee.
7. Evaluate the recommendations implemented for impact on the number of new cases of ARM identified over a defined period of time.

RECOMMENDATIONS FOR CONTROLLING ENDEMIC OR SPORADIC ARM IN LTCF.

ADMISSION

No request for LTCF placement should be refused based on knowledge of a positive ARM culture from any site. New or returning residents should be admitted based on the ability of the facility's personnel to provide supportive and restorative care to the resident. Long Term Care Facilities should be prepared to implement the appropriate infection control measures for all residents infected or colonized with ARM.

ROOM PLACEMENT

Private rooms are generally recommended by the CDC to reduce the potential for transmission of highly transmissible or epidemiologically significant microorganisms. When private rooms are not available, patients colonized or infected with ARM can be placed in a semi-private or multiple bed room with other residents. The recommendations for handwashing and the appropriate use of personal protective equipment, such as gloves, when in contact with blood and all other body fluids are the essential elements in the control of ARM regardless of where the patient is placed in the facility.

HANDWASHING

Handwashing before and after resident contacts and after removing gloves is the single most effective infection control measure known to reduce the potential for transmitting of all microorganisms, including ARM, in any health care facility.

1. Wash hands with soap and running water a) following accidental ungloved contact with blood and other liquid or semi-liquid body fluids such as urine, feces, wound drainage, gastric drainage or the mucous membranes of the mouth and nose, and open lesions or wounds on the skin, b) following the removal of gloves, c) following prolonged contact with clean, dry intact skin for the purpose of providing physical, occupational, speech or recreational therapy and after

assisting with feeding and d) following contact with surfaces and equipment which are soiled with blood or other body fluids.

2. Handwashing is desirable following short contacts of less than a minute in duration with the resident's clean, dry intact skin or when feeding multiple residents at one time. However, it is often impractical to assume that HCW can wash their hands following every short, casual resident contact.

3. Instruct visitors to wash their hands prior to resident contact, following contact with blood or other body fluids, before and after feeding the resident and following contact with another resident.

4. Wash hands routinely with a plain, non-medicated soap (non-antimicrobial). Use disposable paper towels to dry hands. Avoid touching environmental surfaces such as bedside rails and other resident equipment after handwashing.

5. Handwashing products such as alcohol foams, gels or disposable antiseptic towelettes may be substituted for soap and running water and used during procedures which involve multiple patient contacts over a period of time. For example, an antiseptic towelette may be used after removing gloves which had contact with the mucous membranes of a resident's mouth and before contact with the next resident during medication rounds. The use of alternative handwashing products is not recommended if the hands are accidentally soiled with blood or other body fluids.

PROTECTIVE BARRIERS

Personal protective equipment, when worn appropriately, serves two purposes: (1) to protect the HCW from contact with blood or other body fluids which may be infected with bloodborne pathogens such as human immunodeficiency virus (HIV) or hepatitis B virus (HBV) and (2) to reduce the potential for transmission of potentially pathogenic microorganisms from resident-to-resident and from resident-to-health care worker.

Gloves

1. Wear non-sterile latex, vinyl or synthetic gloves for contact with all blood and other liquid or semi-liquid body fluids such as urine, feces, wound drainage, gastric drainage, mucous membranes and open lesions or wounds on the skin.

2. Put gloves on immediately prior to anticipated contact with blood and other body fluids or when touching surfaces soiled with blood or other body fluids. Remove gloves when the specific task is completed and wash hands.

3. Change gloves when performing multiple procedures on a single patient if the gloves become soiled with blood or other body fluids. If the gloves become punctured or torn, handwashing should be performed before putting on clean gloves and proceeding with the care of the resident.

Gowns or Aprons

Wear moisture resistant gowns or aprons when it is anticipated that clothing will become soiled with blood or other body fluids or when contact with soiled surfaces is anticipated. Remove gowns or aprons when the procedure is complete and prior to leaving the resident's room. Discard gowns or aprons in a lined trash receptacle (not considered biohazard waste).

Masks and Eye Protectors or Face Shields

Wear masks and eye protectors or face shields when it is anticipated that blood or other body fluids may be splashed or sprayed onto the mucous membranes of the eyes, nose or mouth.

Other Precautions

Cover open, non-infected wounds or lesions on the hands, forearms or other exposed skin surfaces with an occlusive dressing prior to resident contact.

ENVIRONMENTAL AND EQUIPMENT PROTECTION

The role of the environment in the transmission of ARM has not been well established. It is known that ARM contaminates environmental surfaces such as bedside rails and tables. It is, therefore, possible for hands to be passively recontaminated if these surfaces are touched prior to leaving the resident's room even though appropriate hand washing procedures were followed.

1. Use an Environmental Protection Agency (EPA) registered disinfectant on solid surfaces including floors and furniture in resident occupied areas and in bathrooms and utility rooms.
2. Disinfect shared areas such as community bathrooms, recreational rooms and bedside equipment such as tables, bed rails, bedside commodes, wheelchairs and other assistive devices daily. Areas surrounding residents who have poor hygienic habits such as non-compliance with handwashing following bowel evacuation or who are fecally incontinent may require more than daily disinfection.
3. Wash recreational or physical therapy equipment with a disinfectant when soiled with body fluids and at the end of each day's activity sessions.

BIOHAZARD WASTE

Dispose of medical (biohazard) waste according the California Medical Waste Management Act (MWMA). Consult California Health and Safety Code, Division 20, Chapter 6.1, Section 25015 for specific definitions of medical waste and containment and disposal of biohazard waste.

PATIENT CARE EQUIPMENT

The role of contaminated non-critical patient care equipment in the transmission of ARM has not been well established. However, electronic thermometers used for taking rectal temperatures have been implicated in a VRE outbreak ⁽⁵⁾.

1. Disinfect electronic thermometers used for rectal temperatures after each patient. Use a clean disposable probe cover for each patient.
2. Disinfect electronic thermometers used for oral temperatures at least daily. Use a clean disposable probe cover for each patient.
3. Remove visible blood and body fluid soil from reusable instruments with cool water or an enzymatic cleaning solution. Reusable or disposable equipment or instruments, such as scissors and clamps, should not be shared between residents.
4. Discard disposable (non-sharps) instruments or equipment in a lined waste receptacle (not considered biohazard waste).
5. Dispose of biohazard waste such as needles, syringes with attached needles, lancets, scalpels, glass slides, disposable razors and other sharp disposable items in rigid, puncture resistant sharps containers.

LINEN

Soiled linen, especially linen associated with residents who are fecally incontinent, is grossly contaminated with a variety of microorganisms. The risk of disease transmission is considerably reduced if the linen is handled appropriately.

1. Place soiled linen in a container or plastic bag which prevents seepage of liquid blood and body fluids to the outside of the container. Keep soiled linen away from clothing.
2. Place all soiled linen directly into a linen bag. Avoid putting wet, soiled linen on residents bedside tables, chairs or on counter tops. Special color-coded bags or bags labeled "infectious" or "contaminated" are not necessary.

PATIENT TRANSPORTATION

Health care workers responsible for transporting residents should wear appropriate personal protective equipment if contact with blood or body fluids is anticipated.

1. Wear appropriate personal protective equipment such as gloves and gowns when preparing resident for transportation if soiling of hands or clothing is anticipated.
2. Remove resident's soiled or wet dressings and replace with dry dressing prior to transport.

3. Clean incontinent residents and use a protective diaper, if fecal incontinence, during transportation is anticipated.

COMMUNICATION AND STAFF EDUCATION

Communication and staff education are essential to reducing the transmission of ARM. Health care workers should be informed about the epidemiology of specific ARMs and the role they play in reducing the potential for transmission of these as well as other microorganisms.

1. Provide inservice education on handwashing, isolation precautions, basic microbiology and modes of transmission of specific microorganisms at regular intervals.
2. Observe HCW infection control work practices and correct deficiencies.
3. Provide information and feed back on specific problems identified through the surveillance system such as an increased incidence in ARM colonization or infection. Inform HCW of identified problems and reinforce performance improvement.
4. Establish communication with acute care facilities and notify the Discharge Planner/Social Worker or the Infection Control Practitioner when known culture-positive ARM residents are to be transferred.
5. Request acute care facilities to communicate information on pending LTCF transfers known to be ARM culture-positive.
6. Outline any specific precautions necessary to reduce the potential for transmission on the resident care plans.

ACTIVITIES

Residents should be allowed to ambulate, interact with other residents socially and participate in group activities.

1. Cover wounds with a clean barrier dressing prior to group activities.
2. Clean incontinent residents and use a protective diaper if fecal incontinence is anticipated.

ANTIBIOTIC USAGE

Antibiotics, both oral and parenteral, should only be used to treat patients with suspect or documented clinical infections not colonization. The Infection Control Committee should monitor all antibiotics administered, the indications for which the antibiotic was ordered and the outcome of the resident receiving antibiotic therapy. Criteria for utilizing specific antibiotics should be developed and all physicians should be informed of the criteria. Antibiotics such as vancomycin and 2nd and 3rd generation cephalosporins should not be used when the clinical effectiveness of another class of antibiotic has been described in the literature.

According to the CDC, "vancomycin use has been reported consistently as a risk factor for colonization and infection with VRE and may increase the possibility of the emergence of vancomycin-resistant *S aureus* (VRSA) and or vancomycin-resistant *S epidermidis* (VRSE)". Vancomycin should only be used in the following situations:

1. Treatment of serious infections due to beta-lactam-resistant microorganisms. Physicians should be aware that vancomycin may be less rapidly bactericidal than beta-lactam agents for beta-lactam-susceptible staphylococci.
2. Treatment of infections due to gram-positive microorganisms in patients with serious allergy to beta-lactam antimicrobials.
3. Treatment of antibiotic-associated colitis (AAC) which fails to respond to metronidazole therapy or if AAC is severe or life-threatening.
4. Prophylaxis for endocarditis following certain procedures in patients at high risk for endocarditis (American Heart Association Recommendations).
5. Prophylaxis for major surgical procedures involving implantation of prosthetic materials or devices, e.g., cardiac or vascular procedures and total joint replacement, at institutions with a high rate of infection due to MRSA or methicillin-resistant *S epidermidis*.⁽²⁾

OTHER MEASURES

Other measures which may reduce the potential for ARM transmission between residents include: a) frequent bathing to reduce skin colonization and skin cell desquamation; b) wound dressing changes just prior to group activities; c) encourage resident to cough or sneeze into a disposable tissues and to dispose of the tissue in an appropriate receptacle; d) wash residents hands with soap and water, alcohol foam or gel or antiseptic towelette frequently during the day.

OUTBREAK MANAGEMENT

MRSA is primarily transmitted from resident-to-resident on the unwashed hands of health care workers. Airborne transmission may occur under rare and unusual circumstances. Additionally, health care workers may become transiently colonized at sites other than the hands following contact with a colonized or infected patient. However, this colonization is generally short in duration and probably plays little if any role in the transmission of MRSA.

Gram-negative rods, such as *Pseudomonas aeruginosa* and *Serratia marcescens*, resistant to aminoglycoside antibiotics are primarily transmitted from resident-to-resident on the unwashed hands of the health care workers.

The epidemiology of VRE has not been well defined. It is known that enterococcal species sensitive to most antibiotics colonize the gastrointestinal tract of all healthy individuals. However, VRE is more often found in patients who have received multiple courses of antibiotics, especially vancomycin. In addition to the selective pressures of antibiotics, patients who have had prolonged hospitalization associated with intra-abdominal or cardio-thoracic surgical procedures,

indwelling or vascular access devices or immunosuppressive diseases seem to be at increased risk for VRE colonization and infection.

The recent emergence of VRE in health care facilities, including LTCF, is of grave concern to Infection Control Professionals. First, the microorganisms are not only resistant to vancomycin but also demonstrate high level resistance to penicillins and the aminoglycosides which are the front line antibiotics used today to treat serious enterococci infections. Treatment options may be limited and the use of experimental antibiotics of unproven efficacy may become a necessary treatment option.

OUTBREAK DEFINITION

Developing a precise definition of an outbreak for any infectious disease is difficult. However, a working definition for an outbreak of ARM might be a definite increase in the number of new ARM colonized or infected residents above the endemic (baseline or old cases) frequency in a defined period of time (e.g., month). An outbreak may represent as few as 2 or 3 new cases for facilities where the baseline frequency is low (example: 0-3 new cases per month) or a larger number of new cases if the baseline frequency is higher (8-10 cases per month). An outbreak may be abrupt (many new cases identified over a short period of time) or insidious (a gradual increase in new cases over a longer period of time). An outbreak may be confined to a specific nursing unit, multiple units in close proximity or the entire facility.

INFECTION CONTROL COMMITTEE

The members of the Infection Control Committee and the local health officer should be notified of the outbreak as soon as possible. A plan of action should be drafted and approved by the members of the Committee. It is advisable to seek consultation from an infection control professional to avoid implementing measures (such as culturing the environment) which may be excessive, time consuming and result in unnecessary expenses.

LABORATORY SURVEILLANCE

When it is determined that surveillance cultures of residents or the environment are necessary, the laboratory should be informed so that culture media which is selective for a specific ARM can be used.

1. Obtain surveillance cultures of residents only when there is a clear indication that these cultures are indicated. Cultures of the environment are not routinely recommended unless the outbreak can be epidemiologically linked to an environmental reservoir.
2. Request the laboratory to save the isolates for possible DNA analysis by the California Department of Health Services, Division of Communicable Disease Control or another reference laboratory.

3. Contact the California Department of Health Services, Division of Communicable Disease Control in Berkeley, CA for assistance in controlling the outbreak.

RESIDENT PLACEMENT

Private rooms should be reserved for residents who are infected with ARM and the infected body fluid soils the inanimate environment (e.g., pneumonia or bronchitis with copious pulmonary secretions, purulent wound drainage not contained by barrier dressing or multiple episodes of diarrhea with incontinence). If more than one patient is infected, cohorting or assigning infected residents to the same multiple bed room until the amount of body fluid has diminished may reduce the potential for further transmission. Cohorting colonized residents is not recommended unless epidemiologically linked to the outbreak.

HANDWASHING

Replace plain, non-antiseptic (non-antimicrobial) soap with small containers of antimicrobial soap such as chlorhexidine.

ANTIBIOTIC TREATMENT

Treat infected residents with appropriate antibiotic(s). The antibiotic treatment of choice will depend upon the culture sensitivity report. Antibiotic treatment of culture-positive, non-infected residents (colonized) is not recommended and may induce further antibiotic resistance.

OTHER RECOMMENDATIONS

Other recommendations, in addition to the those listed for sporadic or endemic control, which may be beneficial in reducing the transmission of ARM associated with an outbreak, include the following: (1) bathe resident with mild antiseptic soap and warm water; (2) assign blood pressure cuff, stethoscope and thermometer to each ARM resident and (3) disinfect bedside table, bedrails, commodes and other resident-specific equipment at least daily or more frequently if soiling of the environment with body fluids such as urine and feces is encountered.

SUMMARY

The emergence of ARM is not a new scientific phenomenon. These microorganisms have been influenced over the years by hostile environmental factors which induce genetic restructuring as a survival mechanism. The primary selective force contributing to increased resistance is excessive, long term exposure to antibiotics.

Preventing the emergence of ARM in a health care facility is primarily a physician responsibility. The antibiotic-prescribing practices of many physicians have contributed significantly to the emergence of antibiotic resistant microorganisms. The prescribing patterns of physicians should be closely monitored by the Infection Control Committee.

Controlling the transmission of ARM is primarily the responsibility of those who provide direct bedside care to residents. Handwashing and the appropriate use of gloves are the two primary transmission prevention measures. The use of private rooms or placing infected residents with an appropriate low risk roommate and the use of gowns and aprons should be considered secondary infection control measures.

Unfortunately, all health care facilities regardless of where they are located or the complexity of care rendered will experience sporadic or endemic ARM over the next few years. The ability to ascertain which resident may be colonized with a specific ARM is not possible. It is, therefore, prudent for LTCF to adopt the philosophy that all residents are colonized with ARM as well as other potentially pathogenic microorganisms. If the nursing staff interacting with the patient is conscientious about handwashing and wearing gloves appropriately, the potential of an outbreak will be greatly reduced.

DEFINITION OF TERMS USED IN THIS GUIDELINE⁽⁶⁾

AMINOGLYCOSIDE-RESISTANT GRAM NEGATIVE BACILLI (ARGNB): Gram-negative bacteria which are resistant to gentamicin, tobramycin and/or amikacin.

COHORT: two or more residents colonized or infected with antibiotic-resistant microorganisms (ARM) who are physically separated from other residents who are not known to be colonized or infected with ARM.

COHORT STAFF: the practice of assigning specific health care workers to care only for residents known to be colonized or infected with ARM. These health care workers do not participate in the care of residents who are culture-negative or who have not been cultured for ARM.

COLONIZATION: a resident who is culture-positive for ARM, but has no signs or symptoms of infection.

DECOLONIZATION TREATMENT: the administration of topical, oral or systemic antibiotic treatment for the purpose of eradicating ARM colonization.

ENDEMIC: the usual or baseline frequency (old cases) of ARM colonized or infected residents in a facility during a defined period of time (e.g., month). The baseline frequency is determined by ongoing surveillance and will be different for each facility.

EPIDEMIC: an increase in the incidence (new cases) of ARM colonized or infected residents above the (baseline) endemic level in a defined period of time (e.g, month) established for a specific facility.

ENTEROCOCCUS SPECIES (includes *E. faecium* and *E. faecalis*): a ubiquitous gram-positive microorganism which commonly colonizes the lower gastrointestinal tract of both men and women and the periurethra of women.

INCIDENCE: the number of new ARM colonized or infected cases identified in a defined population (e.g., ward) during a defined period of time (e.g., month).

INFECTED RESIDENT: any resident who has clinical and laboratory evidence of ARM infection (pneumonia, bacteremia).

MRSA: a strain of *Staphylococcus aureus* resistant to methicillin (oxacillin, nafcillin), cephalosporin and imipenem.

NOSOCOMIAL ARM CASE: a resident who develops infection or colonization with ARM while residing in the facility.

OUTBREAK: a definite increase in the number of new ARM colonized or infected residents above the endemic (baseline or old cases) frequency in a defined period of time (e.g., month). An outbreak may represent as few as 2 or 3 new cases for facilities where the baseline frequency is low (example: 2-3 new cases per month) or a larger number of new cases if the baseline frequency is higher (8-10 cases per month). An outbreak may be abrupt (many new cases identified over a short period of time) or insidious (a gradual increase in new cases over a longer period of time)

PREVALENCE: the total number of old and new cases of ARM colonized or infected residents in a given population (e.g., ward) at a designated point in time.

STAPHYLOCOCCUS AUREUS: a ubiquitous species of gram-positive bacteria found on the skin and in the anterior nares of most people. At any given time 20%-40% of adult population are colonized with *S aureus* in their nares. A higher percentage may be colonized with this bacterial species on their skin.

VRE: strains of *Enterococcus* species (including *E. faecalis* and *E. faecium*) resistant to vancomycin.

VIRULENT: capability of a microorganism to produce an infectious process.

ACKNOWLEDGMENT

This guideline was developed by Christine K. Cahill RN, MS, CIC of the California Department of Health Services, Division of Licensing and Certification, Sacramento, CA and Jon Rosenberg MD of the Division of Communicable Disease Control, Berkeley, CA.

The California Department of Health Services extends special recognition to the California APIC Coordinating Council and to Marguerite Jackson RN, MS, FAAN who provided the authors with a critical review of this guideline. The American Hospital Association is acknowledged for releasing for use, without copyright restrictions, their special report *Methicillin-Resistant Staphylococcus aureus (MRSA): A Briefing for Acute Care Hospitals and Nursing Facilities* published in *Infection Control and Hospital Epidemiology* in February, 1994.

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This guideline is intended to be advisory only and has been developed to assist Long-Term Care Facility Infection Control Committees in the development of a rational approach to reducing the potential for ARM transmission. The implementation of all or part of the elements of this guideline will depend on what has worked for the facility in the past. If a facility has existing policies and procedures to control the transmission of a specific ARM and the endemic rate of ARM is low, there may be no need to modify the existing procedures. If, for instance, a LTCF has never had any experience with ARM and they have been requested to accept a new or returning resident colonized or infected with a specific ARM, the guideline may be a helpful resource to the LTCF.